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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/014,899	12/14/2001	Loic Brunel	217148US2	4199
22850 7590 06/26/2007 OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER CORRIELUS, JEAN B	
			ART UNIT 2611	PAPER NUMBER
			NOTIFICATION DATE 06/26/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
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<b>Interview Summary</b>	<b>Application No.</b> 10/014,899	<b>Applicant(s)</b> BRUNEL, LOIC	
	<b>Examiner</b> Jean B. Corrielus	<b>Art Unit</b> 2611	

All participants (applicant, applicant's representative, PTO personnel):

(1) Jean B. Corrielus. (3) \_\_\_\_\_.

(2) Michael Monaco. (4) \_\_\_\_\_.

Date of Interview: 12 June 2007.

Type: a) ☐ Telephonic b) ☐ Video Conference  
c) ☒ Personal [copy given to: 1) ☐ applicant 2) ☒ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☐ No.  
If Yes, brief description: \_\_\_\_\_.

Claim(s) discussed: 1.

Identification of prior art discussed: Applicant's admitted prior art and Gath US patent No. 6,259,743.

Agreement with respect to the claims f) ☐ was reached. g) ☒ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: The proposed response was discussed (copy is attached). However, the argument is not sufficient to overcome the outstanding art rejection.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

  
**JEAN B. CORRIELUS**  
**PRIMARY EXAMINER** 6.25.07

Examiner's signature, if required

## Summary of Record of Interview Requirements

### Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

### Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

#### Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

#### 37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

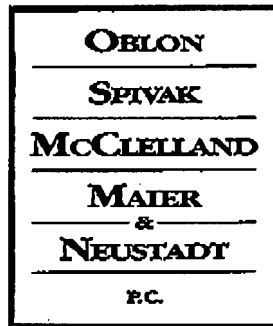
A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,  
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

#### Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.



ATTORNEYS AT LAW

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## FACSIMILE

PLEASE CALL US AT (703) 413-3000 IF THE MESSAGE YOU RECEIVE IS INCOMPLETE OR NOT LEGIBLE

TO	Examiner Jean CORRIELUS	June 11, 2007
	NAME	DATE
	USPTO	571-273-3020
	COMPANY/FIRM	FAX #
	NUMBER OF PAGES INCLUDING COVER: 6	CONFIRM FAX: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
FROM	Mr. Michael E. Monaco	217148US2
	NAME	OUR REFERENCE
	703-413-3000	10/014,899
	DIRECT PHONE #	YOUR REFERENCE

## MESSAGE

Unless otherwise indicated or obvious from the nature of the transmittal, the information contained in this facsimile message is attorney privileged and confidential information intended for the use of the individual or entity named above. If the reader of this message is not the intended recipient or the employee or agent responsible to deliver it to the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error or are not sure whether it is privileged, please immediately notify us by telephone and return the original message to us at the above address via the U.S. Postal Service at our Expense. Thank You.

Docket No: 217148US2

**Applicant Initiated Interview Request Form**Application No.: 10/014,899 First Named Applicant: Loic BRUNELExaminer: Jean CORRIELUS Art Unit: 2611 Status of Application: Pending**Tentative Participants:**(1) Mr. Michael E. Monaco (2) \_\_\_\_\_

(3) \_\_\_\_\_ (4) \_\_\_\_\_

Proposed Date of Interview: June 12, 2007 Proposed Time: 10:30 AM

(1) [ ] Telephonic (2) [X] Personal (3) [ ] Video Conference

Exhibit To Be Shown or Demonstrated: [ ] YES [ ] NO

If yes, provide brief description: \_\_\_\_\_

**Issues To Be Discussed**

Issues (Ref., Obj., etc)	Claims/Fig. #s	Prior Art	Discussed	Agreed	Not Agreed
(1) _____	_____	_____	[ ]	[ ]	[ ]
(2) _____	_____	_____	[ ]	[ ]	[ ]
(3) _____	_____	_____	[ ]	[ ]	[ ]
(4) _____	_____	_____	[ ]	[ ]	[ ]

[ ] Continuation Sheet Attached

**Brief Description of Arguments to be Presented:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

An interview was conducted on the above-identified application on \_\_\_\_\_.

**NOTE:**

This form should be completed by applicant and submitted to the examiner in advance of the interview (see MPEP § 713.01).

This application will not be delayed from issue because of applicant's failure to submit a written record of this interview. Therefore, applicant is advised to file a statement of the substance of this interview (37 CFR 1.133(b)) as soon as possible

\_\_\_\_\_  
(Applicant/Applicant's Representative Signature)\_\_\_\_\_  
(Examiner/SPE Signature)

DOCKET NO: 217148US2

**DO NOT ENTER**IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :  
LOIC BRUNEL : EXAMINER: CORRIELUS, JEAN B.  
SERIAL NO: 10/014,899 :  
FILED: DECEMBER 14, 2001 : GROUP ART UNIT: 2611  
FOR: MULTIUSER DETECTION :  
METHOD AND DEVICE IN DS-CDMA  
MODE

REQUEST FOR RECONSIDERATION UNDER 37 C.F.R. § 1.111

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

In response to the Office Action dated April 27, 2007, Applicant respectfully requests reconsideration of the above-identified application in view of the following remarks.

Remarks/Arguments begin on page 2 of this paper.

Application No. 10/014,899  
Reply to Office Action of April 27, 2007

### REMARKS/ARGUMENTS

Favorable reconsideration of this application, in light of the following discussion, is respectfully requested.

Claims 1-16 are pending.

In the Official Action of April 27, 2007, the Official Action of April 12, 2007 was indicated as having been sent in error and was vacated; Claim 12 was objected to; Claims 1, 2, 8, 9, 13, 15, and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicants' background art in view of Garth (U.S. Patent No. 6,259,743); Claims 11 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicants' background art Garth and Huang et al. (U.S. Patent No. 6,301,293, hereinafter Huang); and Claims 3, 7, 10, and 14 were indicated as containing allowable subject matter.

Applicants acknowledge with appreciation the indication of allowable subject matter.

Briefly recapitulating, Claim 1 is directed to

A method of processing a received signal, comprising the step of:

detecting within said received signal a plurality of possible symbols ( $d_k(i)$ ) transmitted by or for a plurality  $K$  of users, each of the plurality of possible symbols belonging to a modulation constellation and being the subject of a spectral spreading by a spreading sequence ( $s_k(t)$ ), said step of detecting comprising substeps of:

filtering said received signal, said filtering step adapted for supplying a complex vector characteristic of said received signal, and including decomposing said complex vector into a real vector ( $y^R(i)$ ) and an imaginary vector ( $y^I(i)$ );

searching separately for at least a closest neighbor of the real vector and a closest neighbor of the imaginary vector within a respective real and imaginary lattice of points ( $\Lambda, \Omega$ ) corresponding to said modulation constellation; and

estimating the transmitted symbols from components of said closest neighbor of the real vector and the closest neighbor of the imaginary vector so as to produce a vector of estimated symbols.

Application No. 10/014,899

Reply to Office Action of April 27, 2007

By searching the complex and real vectors separately, improvements over conventional methods of spherical searching may be obtained when the number of users  $K$  is large.<sup>1</sup>

In Applicants' Admitted Prior Art, simultaneously received signals of  $K$  users are whitened before nearest neighbor symbols are identified via spherical searching. As acknowledged in the Official Action, Applicants' Admitted Prior Art does not search separately for at least a closest neighbor of the real vector and a closest neighbor of the imaginary vector within a respective real and imaginary lattice of points corresponding to a modulation constellation. To sustain a rejection in view of Applicant's background art, the Official Action applies Garth.

Figure 6 of Garth shows a phase-splitting FSLE equalizer 100 which operates on a CAP/QAM input signal having  $N$  dimensions. FSLE equalizer 100 includes two parallel finite impulse response (FIR) filters 110 and 120. FIR filter 110 is a quadrature FIR filter and FIR filter 120 is an in-phase FIR filter. Quadrature FIR 110 connects to quadrature slicer 135, while in-phase FIR 120 connects to in-phase slicer 130. FSLE equalizer 100 has two modes of operation: a decision-directed mode (steady state) and a start-up mode (non-steady state). In the decision-directed mode of operation, the decision devices (slicers 130 and 135) compare the equalizer complex output samples with all possible transmitted complex symbols and selects a symbol which is closest to the equalizer complex output sample after separately detecting in-phase and quadrature errors.<sup>2</sup>

However, Garth is directed to searching a symbol constellation for a single user, whereas Applicants' Admitted Prior Art and claimed invention is directed to detecting within a received signal a plurality of possible symbols ( $d_k(i)$ ) *transmitted by or for a plurality  $K$  of users*, each of the plurality of possible symbols belonging to a modulation constellation. Conventional methods for searching a constellation of symbols *transmitted by or for a*

<sup>1</sup> Specification page 7, lines 4-30.

<sup>2</sup> Garth, column 4, lines 4-55.



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*plurality K of users* requiring searching a constellation of order  $2K$  (or higher in multipath environments). In contrast, the order of the symbol constellation of Garth is related to the modulation scheme (i.e., QAM) and is not related to the number of users simultaneously transmitting. Thus, one skilled in the art would have no reason to consider QAM receivers when contemplating the problem posed by conventional spherical detectors, as represented by Applicants' Admitted Prior Art.

Furthermore, it is not clear from the Official Action how slicers 120 and 130 of Garth would be applied in Applicants' Admitted Prior Art to arrive at Applicants' invention. That is, in Figure 2 of Applicants' Admitted Prior Art, matched filters *adapted for each user* are used to create corresponding real and imaginary vectors, which are then whitened and searched with a lattice  $\Omega$  of order  $2K$  (i.e., of an order related to the number of users). Applicants submit that mere replacement of lattice  $\Omega$  of order  $2K$  with slicers 130 and 135 of Garth would result in a non-functional system, and is an unreasonable hindsight reconstruction of Applicants' claimed invention.

Accordingly, in light of the previous discussion, Applicant respectfully submits that the present application is in condition for allowance and respectfully request an early and favorable action to that effect.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.

Customer Number

22850

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(OSMMN 03/06)

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